

APPENDIX 11
ADDITIONAL IMPACT ANALYSIS

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Pursuant to the Federal Prevention of Significant Deterioration (PSD) regulations, an analysis of Air Quality Related Values including impairment to visibility, soils, and vegetation that would occur, and general commercial, residential, industrial, and other growth associated with the source must be addressed for projects subject to PSD review. The various components of the additional impact analyses are discussed below.

11.1 Associated Growth Analysis

A growth analysis examines the potential emissions from secondary sources associated with the proposed project. While these activities are not directly involved in project operation, the emissions can reasonably be expected to occur; for instance, industrial, commercial, and residential growth that will occur in the general area due to the Toquop Energy Project (TEP). Secondary emissions do not include any emissions that come directly from a mobile source, such as emissions from the tailpipe of any on-road motor vehicle or the propulsion of a train (U.S. Environmental Protection Agency [USEPA] 1990). They also do not include sources that do not impact the same general area as the source under review. Due to the fact that the project site is not adjacent to a labor force that would serve the plant or any facilities that would support a town, the emissions due to any residential growth will not impact the project area and will not be included in the growth analysis. The construction period will feature a transient work force that does not contribute substantially to long-term growth. The workforce for both construction and operation of the plant will be within commuting distance of the plant, but the air quality impacts will be distant from the TEP and spread out over a large area.

For the proposed facility, secondary emissions will be associated with construction activities. As mentioned above, the only non-temporary emissions (greater than 24 months in duration) associated with construction activities are for a concrete batch plant, which will not be present during normal plant operations. Since the emissions from normal plant operations will exceed those from the concrete batch plant, no further analysis of secondary impacts from associated growth is needed for this project.

11.2 Soils and Vegetation Analysis

PSD regulations require an analysis of air quality impacts on sensitive vegetation types, with significant commercial or recreational value, and sensitive types of soil. The TEP is located in an area consisting primarily of desert shrubland and open range. Affected vegetation consists primarily of sagebrush, mixed shrub, and grasses (Bureau of Land Management [BLM] 2003).

Soils in the vicinity of the plant are composed of alluvial sediments, which are relatively deep and well drained. The predicted impacts attributable to the proposed project are listed against the screening levels presented in *A Screening Procedure for the Impacts of Air Pollution Sources on Plants, Soils, and Animals* (USEPA 1980); see **Table 11-1**. The results show that the TEP impacts are less than 15 percent of each screening concentration value. Therefore, the project will not have an adverse impact on local soils and vegetation.

Table 11-1
Screening Concentrations for Soils and Vegetation

Pollutant	Averaging Period	Screening Concentration ($\mu\text{g}/\text{m}^3$)	Predicted Concentration ($\mu\text{g}/\text{m}^3$)
SO ₂	1-Hour	917	94.66
	3-Hour	786	50.89
	Annual	18	0.31
NO ₂	4-Hour ¹	3,760	485.35
	1-Month ²	564	52.51
	Annual	94	6.30
CO	Weekly ³	1,800,000	216.57

Source: "A Screening Procedure for the Impacts of Air Pollution Sources on Plants, Soils, and Animals". EPA 450/2-81-078, December 1980.

¹ 3-hour averaging time conservatively used for prediction.

² 24-hour averaging time conservatively used for prediction.

³ 8-hour averaging period conservatively used for prediction.

Most of the designated vegetation screening levels are equivalent to or less stringent than the Ambient Air Quality Standards (AAQS) and/or PSD increments; therefore satisfaction of AAQS and PSD increments assures compliance with sensitive vegetation screening levels.

11.3 Visibility Impairment Analysis

The owner or operator of a proposed PSD source is required to demonstrate that the emissions from the source will have no adverse impact on the visibility for the region. Since regional haze (visibility) at PSD Class I areas has been addressed as part of this application, a visibility impairment analysis has been performed. The TEP will have minimal adverse visibility impairment. Further detail and results of the visibility analysis are presented in Appendix 8B of this application.

11.4 References

- BLM. 2003. Proposed Toquop Land Disposal Amendment to the Caliente Management Framework Plan and Final Environmental Impact Statement for the Toquop Energy Project, 2003. United States Department of the Interior Bureau of Land Management.
- USEPA. 1990. New Source Review Workshop Manual, Prevention of Significant Deterioration and Nonattainment Area Permitting. USEPA Office of Air Quality Planning and Standards (OAQPS) RTP, NC 27711. Draft, October 1990.
- _____. 1980. *A Screening Procedure for the Impacts of Air Pollution Sources on Plants, Soils, and Animals*. EPA-450/2-81-078. Research Triangle Park, NC 27711.

ATTACHMENT 11-A
FISH AND WILDLIFE AND NATURAL RESOURCES CORRESPONDENCE

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
NEVADA FISH AND WILDLIFE OFFICE
1340 FINANCIAL BOULEVARD, SUITE 234
RENO, NEVADA 89502

April 9, 2003
File No. 1-5-02-F-494

Memorandum

To: Field Manager, Ely Field Office, Bureau of Land Management, Ely, Nevada

From: Field Supervisor, Nevada Fish and Wildlife Office, Reno, Nevada

Subject: Draft Biological Opinion and Request for Concurrence on Effect Determination for Listed Species Associated With the Proposed Toquop Energy Project

This document transmits the U.S. Fish and Wildlife Service's (Service) draft biological opinion based on our review of the proposed Toquop Energy Project in Lincoln and Clark Counties, Nevada, and its effects on the Mojave population of the desert tortoise (*Gopherus agassizii*), a species federally listed as threatened, and its designated critical habitat, in accordance with section 7 of the Endangered Species Act of 1973, as amended (Act) (16 U.S.C. 1531 *et seq.*). Additionally, you requested our concurrence with your determination that the proposed project is *not likely to adversely affect* the woundfin (*Plagopterus argentissimus*), Virgin River chub (*Gila seminuda*), southwestern willow flycatcher (*Empidonax traillii extimus*), or Yuma clapper rail (*Rallus longirostris yumanensis*), species associated with the Virgin River and federally listed as endangered.

This biological opinion is based on information provided in your memoranda dated May 1, August 21, and October 21, 2002; biological assessment dated May 2002 (Bureau of Land Management [BLM] 2002a); draft environmental impact statement for the proposed Toquop Energy Project (BLM 2002b); a site visit conducted on November 14, 2002; discussions and email between Service and BLM staff; and our files. A complete administrative record of this consultation is on file in the Southern Nevada Field Office, Las Vegas, Nevada.

The Service concurs with BLM's determination that the proposed action is *not likely to adversely affect* the woundfin, Virgin River chub, southwestern willow flycatcher, or Yuma clapper rail. Our concurrence is based on the following:

Field Manager

File No. 1-5-02-F-494

- Based on information provided in hydrological reports (CH2MHill 2002a, 2002b; Dixon and Katzer 2002; Katzer and Dixon 2002; Thomas 2002), and discussions with hydrologists from the National Park Service, Virgin Valley Water District, and the Service's Region 1 office, it is unlikely that effects to surface water flows in the Virgin River resulting from ground water extraction from the carbonate aquifer in the Tule Desert hydrographic area in the amount required for the proposed project would be detectable or measurable.
- Concern remains regarding the cumulative effects over time of groundwater pumping at a regional scale on the surface water flows of the Virgin River. To assist in addressing this concern, the development of a Hydrological Monitoring and Mitigation Plan (HMMP) has been proposed to track groundwater levels over time and identify contingency actions to respond to various water level change scenarios.
- As stated in Nevada State Engineer's Ruling No. 5181 dated November 26, 2002, the National Park Service (NPS) and Lincoln County and Vidler Water Company (LC&VWC), entered into a settlement agreement for pending water rights applications in the Tule Desert, Lincoln County, Nevada, which committed the parties to implement a ground water monitoring, management, and mitigation plan. This plan would assist the Nevada State Engineer in managing the development of the regional aquifer system by LC&VWC without resulting in unreasonable adverse impacts to the water rights and resources of the NPS, including those associated with the Virgin River.

This response constitutes informal consultation under regulations promulgated in 50 CFR § 402.14, which establish procedures governing interagency consultation under section 7 of the Act. This informal consultation does not authorize any incidental take of roundtail chub, southwestern willow flycatcher, or Yuma clapper rail. Should the project description or habitat conditions change, effect determinations should be reevaluated.

Consultation History

On May 6, 2002, we received your request to initiate formal consultation under section 7 of the Act, for an amendment to the Caliente Management Framework Plan (CMFP) to include an additional 640-acre parcel for disposal, and for the proposed Toquop Energy Project located on 100 acres of the 640-acre parcel. Additional information we requested in our memorandum dated July 11, 2002, was received on August 26, 2002, at which time formal consultation was initiated. In our request, we stated the need to reinstate formal consultation on the CMFP, as well as initiate separate consultation on the Toquop Energy Project. Pursuant to a meeting with staff from the BLM Ely Field Office and our Southern Nevada Field Office, we received

Field Manager

File No. 1-5-02-F-494

additional information on the proposed actions in your memorandum we received on October 23, 2002. On January 15, 2003, we requested a 60-day extension for issuance of the biological opinions due to workload issues and the level of complexity associated with the proposed actions.

This formal consultation considers those proposed actions associated with the construction, operation, and maintenance of the Toquop Energy Project. A separate formal consultation is being conducted for amending the CMFP to include the additional 640-acre parcel of land for disposal (File No. 1-5-99-F-450.R).

BIOLOGICAL OPINION

Description of the Proposed Action

The proposed action considered in this consultation includes that which is associated with the BLM's issuance of rights-of-way and/or temporary use permits (ROWs/TUPs) necessary for construction, operation, and maintenance of the proposed Toquop Energy Project and associated infrastructure. The energy facility would be located on 100 acres of a 640-acre parcel to be identified for disposal in an amendment to the CMFP. The BLM would facilitate a sale or exchange of the 640-acre parcel with the Nevada Land and Resource Company (NLRC), which would transfer the land into non-Federal ownership. The legal location of the 640-acre parcel is T 11 S, R 69 E, Sec. 36 (Figure 1).

ROWs/TUPs would be issued by the BLM for: (1) construction and operation of the energy facility prior to formal execution of a land sale or exchange; (2) drilling deep ground water wells in the Tule Desert to provide water for the energy facility; (3) installing a water pipeline and electric distribution power lines for the well pumps from the wellfield to the energy facility; (4) an access corridor from the energy facility to the wellfield for maintenance activities; and (5) an access road from existing roads to the energy facility.

Project features would include the following primary elements:

- Construction (26 months) and operation (40 years) of a 1,100-megawatt combined cycle, water-cooled natural gas-fired electric generating plant, with connections to a natural gas pipeline and electric transmission line.
- Drilling of up to 15 deep wells in the Tule Desert Basin (Hydrographic Basin # 221) over the life of the project sufficient to produce an annual average flow of 3,800 gallons per minute of water for the energy facility, up to a total of 7,000 acre-feet of water per year.

DRAFT

Field Manager

File No. 1-5-02-F-494

Figure 1. Location of proposed Toquop Energy Project and associated infrastructure, Lincoln and Clark Counties, Nevada.

Field Manager

File No. 1-5-02-F-494

- Construction and operation of a 12.5-mile-long, 24-inch-diameter buried water pipeline extending from the wellfield in the Tule Desert, through the Toquop Gap, to the energy facility near the Toquop Wash.
- Construction and operation of a manifold collection system to interconnect the water output from the wellfield to a pressure-regulating water tank.
- Construction and operation of a pressure-regulating water tank located near the wellfield and before the water pipeline to the energy facility.
- Construction and operation of buried electric distribution power lines from the energy facility to the well pumps.
- Paving to a width of 24 feet and straightening sections of 14.4 miles of an existing dirt and gravel road (referred to as Halfway Wash Road and utility corridor road) to be used as an access road extending from Interstate 15 (I-15) to the energy facility site.
- Providing a 12.5-mile-long access right-of-way along an existing dirt and gravel road for maintenance activities between the energy facility and the ground water wellfield.

Table 1. Summary of disturbance from construction of the proposed Toquop Energy Facility.

Project Component	Acreage
Energy facility	100
Production wells (15) and access roads	15
Monitoring well	1
Water pipeline	96
Raw water storage tank	1
Access road	216
Staging areas for road construction	20
Total	449

Field Manager

File No. 1-5-02-F-494

Energy Facility

The energy facility would occupy approximately 100 acres of the 640-acre site (Table 1, Figure 2). This acreage would be surrounded by an 8-foot chain link fence that would enclose four combustion turbine generators, four heat recovery steam generators, four combustion turbine/heat recovery steam generator stacks, two steam turbine generators, a condenser, two cooling towers, a 5-acre equalization pond, a 20-acre evaporation pond, and electrical switchyard. Construction, operation, and maintenance of the proposed project has an expected life of 42 years. The Toquop Energy Project would seek approval to operate up to 24 hours per day, 365 days per year, and would require approximately 25 full-time employees.

The 640-acre disposal area is located adjacent to desert tortoise designated critical habitat and the Mormon Mesa and Beaver Dam Slope Areas of Critical Environmental Concern (ACECs) (Figure 1).

Road Access and Transportation

The energy facility site would be accessible from I-15 via the East Mesa Interchange, 13 miles west of Mesquite. Approximately 14.4 miles of an existing dirt and gravel road would be paved to a width of 24 feet, and some sections would be straightened to construct an access road extending from I-15 to the plant site. The construction right-of-way would encompass 246 acres. The existing road presently encompasses 30 acres; therefore, additional disturbance created from widening the existing road would be 216 acres (Table 1). The permanent right-of-way would include 138 acres, of which 65 acres would be considered new disturbance. Staging areas required for road construction would total 20 acres (Table 1) and would be reclaimed. Of the 14.4 mile-long-road, 13.5 miles, or 222 acres of construction area, are in desert tortoise designated critical habitat and the Mormon Mesa ACEC.

Wellfield

Approximately 3,800 gallons per minute of water would be required to supply the energy facility under annual average design operating conditions. It is estimated that the energy facility would require up to 7,000 acre-feet of water per year. More than 90 percent of this water would be used by an evaporative cooling tower system. The remainder would be filtered, if necessary, to provide service water, potable water, and water for the demineralized water treatment system. The water treatment system would supply a portion of the high-purity water needs of the heat recovery steam generators.

DRAFT

Field Manager

File No. 1-5-02-F-494

Figure 2. Location of 100-acre Toquop energy facility.

Field Manager

File No. 1-5-02-F-494

Up to 15 deep wells, each with a pump enclosed by a small building, would be required to supply ground water to the energy facility over the life of the project. A manifold system would interconnect the output from each of these wells to a single 24-inch-diameter buried pipeline. The buried pipeline and electrical distribution power lines would extend from the Tule Desert to the Toquop Wash plant facility site approximately 12 miles away.

Wells would be spatially dispersed in the southern one-third of the Tule Desert (Figure 1). The wells would be located as close as possible (within 300 feet) to one of the several existing dirt roads that crisscross the area. The maximum disturbed surface area for each well would be approximately 1 acre. This would consist of approximately one-third acre for the new 300-foot-long access road and pipeline and two-thirds acre for construction activities at the well site. Up to a total of 15 acres would be disturbed from installation of wells and construction of access roads (Table 1).

A 500,000-gallon raw water storage tank would be built to maintain constant flow in the pipeline. The storage tank would be located above ground as close as possible to the production well farthest downstream and would feed water by gravity to the energy facility. The maximum area disturbed for the storage tank would be 1 acre (Table 1). An existing 12.5 mile-long road from the energy facility site to the wellfield would be used occasionally to provide access for maintenance and monitoring of production wells.

A single monitoring well would be developed down gradient of the southernmost production well. This monitoring well would be used to assess effects of ground water withdrawal from the deep aquifer. The maximum area disturbed for the monitoring well would be 1 acre (Table 1).

The total area that would be disturbed from construction activities associated with the wellfield would be 17 acres. This disturbance would occur in desert tortoise habitat, but not in designated critical habitat.

Water Pipeline

Ground water withdrawn from the Tule Desert wellfield would be pumped and gravity-fed through a 24-inch-diameter ductile iron or steel pipeline 12.5 miles to the energy facility site. Pipeline capacity would only be sufficient for the Toquop Energy Project. The pipeline route does not follow existing roads except near the wellfield. The pipeline would run south-southwest for approximately 5 miles, crossing Sam's Camp Wash west of the East Mormon Mountains, and then proceed east approximately three-quarters of a mile through the Toquop Gap (Figure 1). It would then turn south-southeast for approximately 6 miles directly to the plant site. The line would cross the South Fork Toquop Wash, one and one-half miles north of

Field Manager

File No. 1-5-02-F-494

the proposed plant site. The wash is approximately 80 feet deep at the proposed pipeline crossing point.

The pipeline would be buried well below potential streambed scour, erosion, and exposure, and away from potential lateral bank migration. The potential for both scour and lateral bank migration would be studied further during final design to determine burial depth necessary to protect the pipeline from exposure and failure during floods. Open-cut construction techniques may preclude reestablishing the vertical wall in some sections of the canyon.

The temporary right-of-way for pipeline construction would be 60 feet wide to allow for soil disturbance during pipeline trenching, laying, and backfilling operations, and laying of the electrical lines to the well field. Staging areas during pipeline construction outside of the proposed energy facility site would consist of a 3-acre area at the northern end of the pipeline in section 4 and a 3-acre area midway along the pipeline just east of Toquop Gap, for a total of 6 acres.

The total acreage disturbed during construction of the water pipeline would be 96 acres (Table 1). All land disturbed during water pipeline construction would be reclaimed using procedures described in Appendix B of the biological assessment; however, the project proponent would retain a 45-acre long-term right-of-way along the pipeline for maintenance purposes. All acreage associated with water pipeline construction would occur in desert tortoise habitat, but not in designated critical habitat.

Lincoln County Multiple Species Habitat Conservation Plan

Lincoln County is in the process of developing a Habitat Conservation Plan (HCP) to be submitted to the Service with an application for an incidental take permit under section 10(a)(1)(B) of the Act. The 640-acre disposal parcel is included in the proposed permit area for the HCP. The purpose of the HCP is to identify and implement conservation measures that would minimize and mitigate to the maximum extent practicable the effects of covered activities on listed and sensitive species. Activities covered under the HCP may include, but are not limited to, residential, commercial, and industrial development.

Proposed Minimization Measures

BLM proposes the following measures to minimize effects to desert tortoises from the proposed project. These measures are included in the BLM's memorandum and biological assessment dated May 1, 2002, memoranda dated August 21 and October 21, 2002; and based on discussions among our respective staffs during preparation of this opinion.

Field Manager

File No. 1-5-02-F-494

- A qualified desert tortoise biologist must be present from March 15 through October 15 (active season) in areas that have not been enclosed with tortoise-proof fence during surface-disturbing activities to ensure that desert tortoises are not inadvertently harmed, unless the BLM and the Service have determined that the presence of a biologist is unnecessary. Outside of designated critical habitat, the biologist shall be on-call at all times from October 16 through March 14 (inactive season) and must check construction areas immediately before construction activities begin.
- A tortoise-proof fence will be constructed along the access road from I-15 to the proposed energy facility site, and around the perimeter of the facility site. If fence construction occurs during the tortoise active season, a qualified tortoise biologist shall be onsite during fence construction to ensure that no tortoises are harmed. During the active season temporary or permanent tortoise-proof fencing will be required to be installed for all areas of surface disturbing activities prior to the onset of construction activities. If the fence is constructed during the tortoise inactive season, a biologist will thoroughly examine the proposed fence line and burrows for the presence of tortoises no more than 3 days before construction commences.
- Any desert tortoises or eggs found in the fence line will be relocated offsite by a qualified tortoise biologist in accordance with approved protocol (Desert Tortoise Council 1994, revised 1999). Tortoise burrows that occur immediately outside of the fence alignment that can be avoided by fence construction activities shall be clearly marked to prevent crushing.
- In accordance with current specifications, tortoise-proof fencing shall consist of 1-inch-horizontal by 2-inch-vertical mesh. The mesh shall extend at least 18 inches above ground and, where feasible, 6 to 12 inches below ground. In situations where it is not feasible to bury the fence, the lower 6 to 12 inches of the fence shall be bent at a 90-degree angle towards potentially approaching tortoises and covered with cobble or other suitable material to ensure that tortoises or other animals cannot dig underneath and create gaps that allow passage. Along the access road, tortoise undercrossings will be provided at intervals of not greater than one mile. It is anticipated that only 2 or 3 undercrossings specifically placed for tortoises will be needed to meet this objective since most of the access road is in terrain that will require frequent culverts for drainage purposes that can also be designed to function as tortoise crossings.
- All tortoise-proof fencing shall be inspected on a quarterly basis. Any repairs shall be completed within 72 hours from March 15 through October 15, and within 7 days from October 16 through March 14. The operator shall inspect the fencing at least on a

Field Manager

File No. 1-5-02-F-494

quarterly basis and after major precipitation events to ensure zero ground clearance. Monitoring and maintenance shall include regular removal of trash and sediment accumulation and restoration of zero ground clearance between the ground and the bottom of the fence, including re-covering the bent portion of the fence if not buried. The operator shall perform maintenance when needed, including removing trash, sediment accumulation, and other debris. Fencing may be removed upon termination and reclamation of the project, or when it is determined by the BLM and the Service that the fence is no longer necessary.

- During surface-disturbing activities, tortoise burrows shall be avoided whenever possible. If a tortoise is found onsite during project activities that may result in take of the tortoise (harm, displace, harass, wound, trap, capture, or kill), such activities shall cease until the tortoise moves or is moved. The tortoise shall be moved by a qualified tortoise biologist. All workers shall also be instructed to check underneath all vehicles before moving such vehicles, and also within stockpiled materials. Tortoises often take cover under vehicles and construct burrows in stockpiled material.
- Construction sites, staging areas, and access routes shall be cleared by a qualified tortoise biologist before the start of construction. The project area shall be surveyed for desert tortoise using survey techniques that provide 100 percent coverage. From March 15 through October 15, the preconstruction clearance shall take place no more than 3 days prior to initiation of construction; from October 16 through March 14, the preconstruction clearance shall take place no more than 10 days prior to initiation of construction. All desert tortoise burrows, and other species' burrows that may be used by tortoises, will be examined to determine whether the burrow is occupied by desert tortoises. Tortoise burrows shall be cleared of tortoises and eggs, and collapsed. Any desert tortoises or eggs found in the fenced area will be removed under the supervision of a qualified tortoise biologist in accordance with Service protocol (Desert Tortoise Council 1994, revised 1999).
- The BLM must approve the selected consulting firm/biologist to be used by the applicant to implement the terms and conditions of rights-of-way (ROWs) issued by the BLM. Any biologist and/or firm not previously approved must submit a curriculum vitae and be approved by the BLM before being authorized to represent the BLM in meeting compliance with the terms and conditions of the ROWs. Other personnel may assist with implementing terms and conditions that involve tortoise handling, monitoring, or surveys, only under direct field supervision by the approved qualified biologist.

Field Manager

File No. 1-5-02-F-494

- Tortoises and nests shall be handled and relocated by a qualified tortoise biologist in accordance with Service-approved protocol (Desert Tortoise Council 1994, revised 1999). Burrows containing tortoises or nests shall be excavated by hand, with hand tools, to allow removal of the tortoise or eggs. Desert tortoises moved during the tortoise inactive season or those in hibernation, regardless of date, must be placed into an adequate burrow; if one is not available, one shall be constructed in accordance with criteria described in *Guidelines for Handling Desert Tortoises During Construction Projects* (Desert Tortoise Council 1994, revised 1999). During mild temperature periods in the spring and early fall, tortoises removed from the site shall not necessarily be placed in a burrow. Tortoises and burrows shall only be relocated to federally-managed lands. If the responsible Federal agency is not the BLM, verbal permission, followed by written concurrence, shall be obtained from the BLM and the Service before relocating the tortoise or eggs to lands not managed by the BLM.
- Tortoises that are moved offsite and released into undisturbed habitat on public land must be placed in the shade of a shrub, in a natural unoccupied burrow similar to the hibernaculum in which it was found, or in an artificially constructed burrow in accordance with Service-approved protocol (Desert Tortoise Council 1994, revised 1999).
- If, after the project has been fenced and the tortoise clearance completed, a desert tortoise is encountered and is in imminent danger, it shall be moved out of harm's way and onto adjacent BLM land by personnel that have completed the training requirements described in the *Guidelines for Handling Desert Tortoises During Construction Projects* (Desert Tortoise Council 1994, revised 1999). If the tortoise cannot be avoided or moved out of harm's way onto BLM land, it shall be placed in a cardboard box or other suitable container and held in a shaded area until BLM personnel can retrieve the tortoise.
- If possible, overnight parking and storage of equipment and materials, including stockpiling, shall be in previously disturbed areas or areas to be disturbed that have been cleared by a tortoise biologist. If not possible, areas for overnight parking and storage of equipment shall be designated by the tortoise biologist.
- All vehicular traffic shall be restricted to construction areas, existing access roads, or those roads approved by the BLM in consultation with the Service.
- Project activity areas shall be clearly marked or flagged at the outer boundaries before the onset of construction. All activities shall be confined to designated areas. Blading of

Field Manager

File No. 1-5-02-F-494

vegetation shall occur only to the extent necessary and shall be limited to areas designated for that purpose by the BLM or tortoise biologist.

Collection and Distribution of Disturbance Fees

This section is currently under discussion. NOTE: Fee increased to \$648 as of March 1, 2003.

Prior to issuance of any Federal permit, lease, or authorization for any surface-disturbing activity, the project proponent shall pay a remuneration fee for each acre of surface disturbance. The amount of said fee was calculated based on the compensation formula described in Hastey et al. (1991), and is determined as follows (Table 2):

Table 2. Calculation of remuneration fees and compensation rates for acreage proposed to be disturbed during the construction, operation, and maintenance of the Toquop Energy Project.

Habitat designation	Acreage disturbed	Compensation ratio	Per acre compensation rate (\$)	Total Compensation (\$)
Non-critical	227	1	633	143,691
Critical	165	5	3,165	522,225
Critical	57	4	2,532	144,324
Total	449			810,240

This fee will be paid directly into the Desert Tortoise Public Lands Conservation Fund (account number 730-9999-2315) (section 7 account) for compensation of desert tortoise habitat loss. These fees are based on a rate of \$633 per acre of disturbance and multiplied by the appropriate compensation ratio (Table 2). If fees are paid after March 1, 2003, the rate will be indexed for inflation based on the Bureau of Labor Statistics Consumer Price Index for All Urban Consumers (CPI-U). Information on the CPI-U can be found on the internet at: <http://stats.bls.gov/news.release/cpi.nws.htm>. Clark County serves as the administrator of the funds, but does not receive any benefit from administering these funds. These funds are independent of any other fees collected by Clark County for desert tortoise conservation planning. The payments shall be

Field Manager

File No. 1-5-02-F-494

accompanied by the *Section 7 Fee Payment Form*, and completed by the payee. The project proponent or applicant may receive credit for payment of such fees and deduct such costs from desert tortoise impact fees charged by local government entities. Payment shall be by certified check or money order payable to Clark County and delivered to:

Clark County Habitat Conservation
Department of Comprehensive Planning
Clark County Government Center, Third Floor
500 South Grand Central Parkway
Las Vegas, Nevada 89155-1712
(Attn: Christina Gibson)
(702) 455-4181

In addition, a copy of the form will be accompanied by a payment verification and delivered to:

The Bureau of Land Management
Ely Field Office
HC 33 Box 33500
Ely, Nevada 89301-9408
Attn: Field Manager

- A reclamation plan will be developed for temporarily disturbed lands (276 acres) associated with the Toquop Energy Project. The reclamation plan will describe objectives and methods to be used, species of plants and/or seed mixture to be used, time of planting, success standards, and follow-up monitoring. Depending upon the size and location of specific project features, reclamation may involve recontouring; rehabilitation and restriction of access points; or intensive reclamation over the entire area of surface disturbance. The plan shall be prepared within 60 days following completion of the surface disturbance phase of the project.
- Since 65 acres of permanent disturbance will occur within the Mormon Mesa ACEC, the project proponent will rehabilitate an equivalent number of acres within the ACEC beyond reclamation associated with the access road. This will be done within 6 months of completion of construction. Identification of such lands and the extent of reclamation will be determined by the BLM in consultation with the Service. These actions will occur in addition to payment of remuneration fees and other minimization measures in this biological opinion.

Field Manager

File No. 1-5-02-F-494

- A litter control program shall be implemented to minimize predation on tortoises by ravens drawn to the project site. This program shall include the use of covered, raven-proof trash receptacles, removal of trash from project areas to the trash receptacles following the close of each work day, and proper disposal of trash in a designated solid waste disposal facility. Appropriate precautions will be taken to prevent litter from blowing out along the road when trash is removed from the site. A litter control program shall be implemented by the responsible Federal agency or their contractor, to minimize predation on tortoises by ravens and other predators drawn to the project.
- A tortoise education program shall be presented to all personnel working on the project or activities associated with the project. This program shall be presented by a qualified tortoise biologist. The program shall include information on the life history of the desert tortoise, legal protection for desert tortoises, penalties for violations of Federal and state laws, general tortoise activity patterns, reporting requirements, measures to protect tortoises, terms and conditions of the BLM-issued ROWs, and personal measures that employees can employ to promote the conservation of desert tortoises. The definition of “take” will also be explained. Specific and detailed instructions will be provided on the proper techniques to capture and move tortoises that appear onsite, in accordance with Service-approved protocol (Desert Tortoise Council 1994, revised 1999).
- The BLM’s Caliente Field Station (775-726-8100) and the Service’s Southern Nevada Field Office (702-515-5230) must be notified of any desert tortoise death or injury resulting from project implementation by close of business on the following work day. In addition, the Service’s Division of Law Enforcement shall be notified in accordance with reporting requirements.
- All appropriate Nevada Division of Wildlife (NDOW) permits or letters of authorization shall be acquired prior to handling desert tortoises and their parts, and prior to initiation of any activity that may require handling tortoises.
- The project proponent will submit a document to the BLM within 30 days of completion of the project, showing the number of acres disturbed, remuneration fees paid, and number of tortoises taken, which includes capture and displacement, killed, injured, and harassed by other means, during project activities covered under the biological opinion.
- The measures included in this biological opinion shall be reviewed by the BLM’s wildlife staff to ensure that appropriate measures have been incorporated into the BLM authorization to minimize the potential take of desert tortoise and loss of habitat.

Field Manager

File No. 1-5-02-F-494

- In accordance with *Procedures for Endangered Species Act Compliance for the Mojave Desert Tortoise* (Service 1992), a qualified desert tortoise biologist should possess a bachelor's degree in biology, ecology, wildlife biology, herpetology, or closely related fields as determined by the BLM. The biologist must have demonstrated prior field experience using accepted resource agency techniques to survey for desert tortoises and tortoise sign, which should include a minimum of 60 days of field experience. All tortoise biologists shall comply with the Service-approved handling protocol prior to conducting tasks in association with terms and conditions of the biological opinion. In addition, the biologist shall have the ability to recognize tortoise sign and accurately record survey results.
- A BLM representative(s) will be designated to be responsible for overseeing compliance with the reasonable and prudent measures, terms and conditions, reporting requirements, and re-initiation requirements jointly agreed to by the BLM and the Service for the Toquop Energy Project. The designated representative shall provide coordination among the project proponent, the BLM, and the Service.

In addition, based on discussions between BLM and Service staff, the BLM agreed to include the following measure hereby incorporated into the project description, and described in the BLM's memorandum dated August 21, 2002:

- The BLM will withhold patenting of lands within the 640-acre disposal parcel until such time that the patentee and Lincoln County enter into a development agreement (DA) that would require the transferred land to be covered under the Lincoln County HCP, or individual HCP. The DA would specify that any action requiring grading within the sale area, or receipt of a building permit would not be authorized by Lincoln County until one of the following actions is completed: (a) the Lincoln County HCP is completed; or (b) an individual section 10 permit is obtained from the Service.

Status of the Species Rangewide

The desert tortoise is a large, herbivorous reptile found in portions of California, Arizona, Nevada, and Utah. It also occurs in Sonora and Sinaloa, Mexico. The Mojave population of the desert tortoise includes those animals living north and west of the Colorado River in the Mojave Desert of California, Nevada, Arizona, southwestern Utah, and in the Colorado Desert in California. Desert tortoises reach 8 to 15 inches in carapace length. Adults have a domed carapace and relatively flat, unhinged plastron. Shell color is brownish, with yellow to tan scute centers. The forelimbs are flattened and adapted for digging and burrowing. Optimal habitat has

Field Manager

File No. 1-5-02-F-494

been characterized as creosote bush scrub in which precipitation ranges from 2 to 8 inches, where a diversity of perennial plants is relatively high, and production of ephemerals is high (Luckenbach 1982; Turner 1982; Turner and Brown 1982). Soils must be friable enough for digging of burrows, but firm enough so that burrows do not collapse. Desert tortoises occur from below sea level to an elevation of 7,300 feet, but the most favorable habitat occurs at elevations of approximately 1,000 to 3,000 feet (Luckenbach 1982).

Desert tortoises are most active during the spring and early summer when annual plants are most common. Additional activity occurs during warmer fall months and occasionally after summer rain storms. Desert tortoises spend the remainder of the year in burrows, escaping the extreme conditions of the desert. The size of desert tortoise home ranges varies with respect to location and year. Females have long-term home ranges that are approximately half that of the average male, which range from 25 to 200 acres (Berry 1986). Over its lifetime, each desert tortoise may require more than 1.5 square miles of habitat and make forays of more than 7 miles at a time (Berry 1986). In drought years, the ability of tortoises to drink while surface water is available following rains may be crucial for tortoise survival. During droughts, tortoises forage over larger areas, increasing the likelihood of encounters with sources of injury or mortality including humans and other predators. Desert tortoises possess a combination of life history and reproductive characteristics which affect the ability of populations to survive external threats. Tortoises may require 20 years to reach sexual maturity (Turner, *et al.* 1984; Bury 1987).

The desert tortoise is most commonly found within the desert scrub vegetation type, primarily in creosote bush scrub. In addition, it is found in succulent scrub, cheesebush scrub, blackbrush scrub, hopsage scrub, shadscale scrub, microphyll woodland, Mojave saltbush-allscale scrub, and scrub-steppe vegetation types of the desert and semidesert grassland complex (Service 1994). Within these vegetation types, desert tortoises potentially can survive and reproduce where their basic habitat requirements are met. These requirements include a sufficient amount and quality of forage species; shelter sites for protection from predators and environmental extremes; suitable substrates for burrowing, nesting, and overwintering; various plants for shelter; and adequate area for movement, dispersal, and gene flow. Throughout most of the Mojave Region, tortoises occur most commonly on gently sloping terrain with soils ranging from sand to sandy-gravel and with scattered shrubs, and where there is abundant inter-shrub space for growth of herbaceous plants. Throughout their range, however, tortoises can be found in steeper, rockier areas. Further information on the range, biology, and ecology of the desert tortoise can be found in Berry and Burge (1984); Burge (1978); Burge and Bradley (1976); Bury, *et al.* (1994); Germano, *et al.* 1994; Hovik and Hardenbrook (1989); Karl (1981, 1983a, 1983b); Luckenbach (1982); Service (1994); Turner, *et al.* 1984; and Weinstein, *et al.* (1987).

Field Manager

File No. 1-5-02-F-494

On August 4, 1989, the Service published an emergency rule listing the Mojave population of the desert tortoise as endangered (54 FR 42270). On April 2, 1990, the Service determined the Mojave population of the desert tortoise to be threatened (55 FR 12178). Reasons for the determination included loss of habitat from construction projects such as roads, housing and energy developments, and conversion of native habitat to agriculture. Grazing and off-highway vehicle (OHV) activity have degraded additional habitat. Also cited as threatening the desert tortoise's continuing existence were illegal collection by humans for pets or consumption, upper respiratory tract disease (URTD), predation on juvenile desert tortoises by common ravens (*Corvus corax*) and kit foxes (*Vulpes macrotis*), and collisions with vehicles on paved and unpaved roads. Fire is an increasingly important threat to desert tortoise habitat. Over 500,000 acres of desert lands burned in the Mojave Desert in the 1980s. Fires in Mojave desert scrub degrade or eliminate habitat for desert tortoises (Appendix D of Service 1994).

On February 8, 1994, the Service designated approximately 6.4 million acres of critical habitat for the Mojave population of the desert tortoise in portions of California, Nevada, Arizona, and Utah (59 FR 5820), which became effective on March 10, 1994. Critical habitat is designated by the Service to identify the key biological and physical needs of the species and key areas for recovery, and focuses conservation actions on those areas. Critical habitat is composed of specific geographic areas that contain the primary constituent elements of critical habitat, consisting of the biological and physical attributes essential to the species' conservation within those areas, such as space, food, water, nutrition, cover, shelter, reproductive sites, and special habitats. The specific primary constituent elements of desert tortoise critical habitat are: Sufficient space to support viable populations within each of six recovery units (RUs), and to provide for movement, dispersal, and gene flow; sufficient quality and quantity of forage species and the proper soil conditions to provide for the growth of these species; suitable substrates for burrowing, nesting, and overwintering; burrows, caliche caves, and other shelter sites; sufficient vegetation for shelter from temperature extremes and predators; and habitat protected from disturbance and human-caused mortality.

Approximately 1.2 million acres were designated as critical habitat in Nevada. Critical habitat units (CHUs) were based on recommendations for Desert Wildlife Management Areas (DWMAs) outlined in the *Draft Recovery Plan for the Desert Tortoise (Mojave Population)* (Service 1993). These DWMAs are also identified as ACECs by the BLM. Because CHU boundaries were drawn to optimize reserve design, the CHU may contain both "suitable" and "unsuitable" habitat. Suitable habitat can be generally defined as areas that provide the primary constituent elements. Approximately 222 acres (roughly one-half) of the acreage that would be disturbed during project activities occurs in critical habitat.

Field Manager

File No. 1-5-02-F-494

On June 28, 1994, the Service approved the final Desert Tortoise Recovery Plan (Service 1994).

The Desert Tortoise Recovery Plan divides the range of the desert tortoise into 6 RUs and recommends establishment of 14 DWMA's throughout the RUs. Within each DWMA, the Desert Tortoise Recovery Plan recommends implementation of reserve-level protection of desert tortoise populations and habitat, while maintaining and protecting other sensitive species and ecosystem functions. The design of DWMA's should follow accepted concepts of reserve design.

As part of the actions needed to accomplish recovery, the Desert Tortoise Recovery Plan recommends that land management within all DWMA's should restrict human activities that negatively impact desert tortoises (Service 1994). DWMA's have been designated by BLM through development or modification of their land use plans in Nevada, Arizona, and Utah. Land-use planning activities are underway in California to designate DWMA's/ACECs. The regulation of activities within critical habitat through section 7 consultation is based on recommendations in the Desert Tortoise Recovery Plan. DWMA's/ACECs have been designated in Utah, Arizona, and Nevada. Similar designations are in progress in California for the Western Mojave RU, and Northern and Eastern Colorado RUs. The proposed project area occurs within the Northeastern Mojave RU.

The Northeastern Mojave RU occurs primarily in Nevada, but it also extends into California along the Ivanpah Valley and into extreme southwestern Utah and northwestern Arizona (Figure 3). Vegetation within this unit is characterized by creosote bush scrub, big galleta-scrub steppe, desert needlegrass scrub-steppe, and blackbrush scrub (in higher elevations). Topography is varied, with flats, valleys, alluvial fans, washes, and rocky slopes. Much of the northern portion of the RU is characterized as basin and range, with elevations from 2,500 to 12,000 feet. Desert tortoises typically eat summer and winter annuals, cacti, and perennial grasses. Desert tortoises in this RU, the northern portion of which represents the northernmost distribution of the species, are typically found in low densities (approximately 10 to 20 adults per square mile).

Long-term monitoring of desert tortoise populations is a high priority recovery task as identified in the Desert Tortoise Recovery Plan. From 1995 to 1998, pilot field studies and workshops were conducted to develop a monitoring program for desert tortoise. In 1998, the Desert Tortoise Management Oversight Group chose line distance sampling as the appropriate method to determine rangewide desert tortoise population densities and trends. Monitoring of populations using this method is underway across the range of the desert tortoise and baseline population data will be forthcoming. Successful rangewide monitoring will enable managers to evaluate the overall effectiveness of recovery actions and population responses to these actions, thus guiding recovery of the Mojave desert tortoise.

DRAFT

Field Manager

File No. 1-5-02-F-494

Figure 3. Desert Tortoise Recovery Units.